

## PATENT ABSTRACTS OF JAPAN

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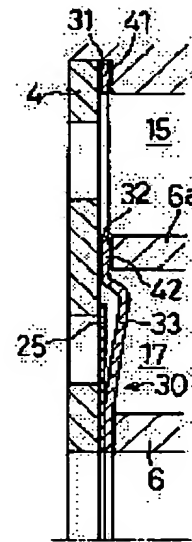
## (54) GASKET FOR COMPRESSOR

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To cope with the change of a position of a partition at a housing side, by forming the beads curved and projected to a housing side throughout the overall width of a sealing part, on the inner and outer sealing parts of a gasket which is held between a cylinder block of a compressor, and the housing, with a valve plate and a discharge valve.

**SOLUTION:** In a swash plate compressor, both edges of a cylinder block are closed by a housing 6 through a valve plate 4, an inlet valve is mounted between the valve plate 4 and the cylinder block, and a discharge valve 25, and a gasket 30 integrated with a retainer, are mounted between the valve plate 4 and the housing 6.

The gasket 30 comprises an elastic film on a surface of a metallic base, and comprises an outer sealing part 31 for sealing an outer part of the compressor, and an inner sealing part 32 for sealing a part between the high and low pressure areas in the housing 6, and both sealing parts 31, 32 are respectively provided with the beads 41, 42. The bead 42 is curved so that it is kept into contact with an edge face of the partition 6a, so that the sealing characteristics can be stably kept even when the mounting position to the bead 42 is shifted.



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**CLAIMS**

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[Claim(s)]

[Claim 1] The gasket for compressors which is a gasket equipped with the outside seal section which it comes to cover the front face of a metal substrate elastic membrane, is fastened with a ports plate and a discharge valve between the cylinder block of a compressor, and housing, and closes the outline of a compressor, and the inner seal section which closes between the quantity in housing, and a low-voltage field, and is characterized by to form in the above-mentioned double-seal section the bead which carried out the curve protrusion to the housing side covering full [ of the seal section ].

[Claim 2] The gasket for compressors according to claim 1 characterized by installing the retainer section of the above-mentioned discharge valve in one from the seal section in the above.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is used for a compressor and relates to amelioration of a suitable metal gasket.

[0002]

[Description of the Prior Art] The cam-plate room where the cylinder block of a pair is opposite-  
\*\*ed) forward and backward, and a feedback refrigerant is introduced into a part for a bond part is formed, while each cylinder block is blockaded with housing of order through a ports plate and a discharge valve, respectively in both the outer edge, an inhalatorium is formed outside and the regurgitation room is formed in each housing inside, the conventional compressor, for example, swash-plate-type compressor. Fit-in bearing of the driving shaft is carried out to the common medial-axis hole of each cylinder block, and the cam plate which fixed to this driving shaft is held in the cam-plate interior of a room pivotable. Moreover, before and after arranging in the shape of parallel to the circumference of a driving shaft, two or more a pair of boas are formed in a cylinder block, and the piston of the duplex type moored to the cam plate through the shoe is inserted in each boa free [ direct-acting ]. While the inhalatorium of each housing and the inhalation hole open for free passage are formed through the suction valve portion between each boa, the regurgitation room of each housing and the discharge opening open for free passage are formed in each ports plate through the discharge valve and the gasket between each boa. And the regurgitation path which opens a front and each regurgitation room of rear-side housing for free passage is formed in the inhalation path list which opens a cam-plate room and the inhalatorium of each housing for free passage at each cylinder block.

[0003] Elastic membrane is put on the front face of a metal substrate, the gasket used for this compressor has the outside seal section which closes the outline of a compressor, and the inner seal section which closes the septum part which divides the inside of housing to a regurgitation room and an inhalatorium, and the thing in which the bead was formed is also known by the double-seal section with this predetermined width of face. As shown in drawing 6 , a bead 52 is the predetermined width of face W1. In the seal section 51 which it had It is prepared in the center of the flat parts 53 and 54 on either side as a full bead of a crest. A sealing fluid is closed, when the seal section 51 is fastened from [ of drawing ] the upper and lower sides, a bead 52 is close with a top member in the top 52a and the flat parts 53 and 54 on either side are close to a bottom member on the inferior surface of tongue. carrying out elastic deformation so that it may be inserted into both members at this time and may be crushed — width of face W1 of the seal section 51 from — width-of-face W3 of the flat parts 53 and 54 on either side, and W4 Deducted width of face W2 bead 52 part — it is — namely, the seal section 51 — that width of face W1 Elastic deformation will be carried out so that it may be crushed only in a part.

[0004] Moreover, as a gasket which prepared this kind of full bead, in recent years as carried by JP,4-125682,U The gasket for compressors which prepared the retainer section of a reed valve in the flat surface of a substrate at one is proposed, and it sets to such a gasket. In order to secure the reinforcement of the retainer section enough, thickness of a substrate cannot be made so thin but the thickness of a substrate is actually set as about 0.6-1.0mm. This numeric

value belongs to comparatively thick criteria as a soft-metal gasket.

[0005] Thus, it sets to the comparatively thick gasket with which the thickness of a substrate amounts to 0.6mm or more, and is the width of face W1 of the seal section 51 as mentioned above. When the bead 52 is formed only in the part, a bead 52 is the height h1. It is width of face W2 comparatively. Since it is narrow, the rigidity of a bead 52 may be large, as a result, the rigidity of a bead 52 may bind tight, and it may exceed the force. Therefore, in such a case, a bead 52 cannot be crushed easily and the situation where the amount of compression of a bead 52 is insufficient, and sufficient closure engine performance cannot be demonstrated arises.

[0006]

[Problem(s) to be Solved by the Invention] It proposed preparing the bead (the above-mentioned flat parts 53 and 54 not existing) which curved covering full [ of the seal section ] previously so that a bead might tend to be crushed even if the thickness of a substrate is comparatively thick, and this invention person etc. could hold the moreover sufficiently big spring force in view of the above point. However, as shown, for example in drawing 5, the seal section 51 of the gasket used for the above-mentioned compressor attaches greater importance than to housing which generally consists of an aluminum system metal to closure nature with the ports plate 4 which consists of an iron system metal, and it is constituted so that top 55a of a bead 55 may be close with the 4th page of a ports plate. Therefore, if a gap (the chain line shows to drawing) of some arises in the fastening location to a bead 55 by the thinning of housing side septum 6a etc., the closure nature which the supporting-point location was unevenly distributed and was stabilized conversely will be spoiled.

[0007] This invention is offering the gasket which can respond free also to location fluctuation of a housing side septum the solution technical problem at the same time it gives good flexure nature to a bead.

[0008]

[Means for Solving the Problem] The outside seal section which it comes to cover the front face of a metal substrate elastic membrane, and the gasket for compressors according to claim 1 is fastened with a ports plate and a discharge valve between the cylinder block of a compressor, and housing, and closes the outline of a compressor, It is the gasket equipped with the inner seal section which closes between the quantity in housing, and a low voltage field, and is characterized by forming in the above-mentioned double-seal section the bead which carried out the curve protrusion to the housing side covering full [ of the seal section ].

[0009] While the ratio of the width of face to the height of a bead becomes large, and it is easy to be crushed by this gasket, since the bead which curved covering full [ of the seal section ] is prepared, and very good flexure nature is obtained Since only the crowning of a bead contacts the septum by the side of housing especially, even when it is generated in some fluctuation in a septum location even if, the contact with a bead is \*\*\*\*(ed) within the limits of septum width of face, and the stable closure nature is secured.

[0010] Moreover, like a gasket according to claim 2, on reinforcement, because a comparatively thick substrate is required, the effectiveness is much more remarkable in that in which the retainer section of a discharge valve was installed in one from the inner seal section.

[0011]

[Embodiment of the Invention] Hereafter, based on drawing, the gestalt of operation of this invention is explained concretely. Drawing 1 shows the swash-plate-type compressor which really [ retainer ] adopted the formal gasket, the both ends of the cylinder blocks 1 and 2 opposite--\*\* (ed) forward and backward are blockaded with a front and the housing 5 and 6 of RIYA through the ports plates 3 and 4 of order, and these are combined by two or more through bolts 7 inserted in the bolt free passage holes 1a and 2a. The cam-plate room 8 is formed in a part for the bond part of cylinder blocks 1 and 2, and the cam plate 10 fixed to the driving shaft 9 which penetrates medial-axis hole 1b of both the cylinder blocks 1 and 2 and 2b is held there. Five pairs of boas 11 are formed in the radiation location centering on a driving shaft 9 in parallel with a driving shaft 9, the piston 12 of a duplex type is fitted in each boa 11, and each piston 12 is moored to the above-mentioned cylinder blocks 1 and 2 by the cam plate 10 through the semi-sphere-like shoe 13.

[0012] Inhalatoriums 14 and 15 are formed in the method region of outside at the above-mentioned front and the housing 5 and 6 of RIYA, respectively, and the regurgitation rooms 16 and 17 are formed in the method region of inside. Moreover, the discharge openings 20 and 21 for carrying out the regurgitation of the high-pressure refrigerant gas compressed into the regurgitation room 16 and 17 are formed in each boa 11 from inhalatoriums 14 and 15 at the ports plates 3 and 4 of order from the inhalation holes 18 and 19 and each boa 11 for inhaling a low-pressure refrigerant gas, respectively. Furthermore, suction valve portions 22 and 23 are fastened between ports plates 3 and 4 and cylinder blocks 1 and 2, and the formal gasket 30 is really [ retainer ] fastened with discharge valves 24 and 25 between ports plates 3 and 4 and housing 5 and 6.

[0013] Elastic membrane is put on the front face of an about 0.8mm metal substrate, and the above-mentioned gasket 30 which is the characteristic component of this invention explains a gasket 30 in detail hereafter based on drawing 2 -4. Among drawing, in housing 5 and 6, the outside seal section in which 31 close the outline of a compressor, and 32 are the inner seal sections which close between the high-pressure fields (blanking section equivalent to a regurgitation room) a and the low voltage fields (blanking section of an inhalatorium) b which are \*\*\*\*(ed), and both the both-ends edges of this inner seal section 32 extend in the direction of a periphery, and are connected by the outside seal section 31. And in order to raise closure nature to the outside seal section 31 and the inner seal section 32, the beads 41 and 42 which carried out the curve protrusion, respectively are formed. In addition, the ridgeline (crowning) of beads 41 and 42 is shown to drawing 2 by the thin line, and 33 is the one retainer section which is arranged in a radial five pieces from a center, and has an upheaval side for regurgitation \*\*\*\*\*.

[0014] Although the fundamental configuration of the outside seal section 31 and the inner seal section 32 is the same, the inner seal section 32 shown in drawing 4 is explained below for convenience. The configuration is made to completely curve conventionally in the inner seal section 32 fastened by a ports plate 4 and septum 6a which divides the inside of housing 6, so that from this drawing, and the bead 42 which curved covering full [ the ] may be formed and the protrusion top 42a may moreover contact the end face of septum 6a by the reverse sense.

[0015] Thus, it sets to the constituted gasket 30. Since it is formed so that the beads 41 and 42 prepared in the outside seal section 31 and the inner seal section 32 may curve covering full [ of each seal sections 31 and 32 ], respectively, and the former solves and the flat part of both ends does not exist at all, When the seal sections 31 and 32 are fastened with a ports plate 4 and housing 6 from the both sides, elastic deformation will be carried out so that crushing of the whole seal sections 31 and 32 may be carried out. Therefore, rather than before, it becomes large, and beads 41 and 42 tend to be crushed by this, and the ratio of the width of face to the height of the part beads 41 and 42 can be equipped with the sufficiently big spring force.

[0016] The top 42a a bead 42 so that it may see in this drawing Moreover, a housing 6 side, that is, even when it is made to curve, for example, a gap (the chain line shows to drawing) of some arises in the fastening location to a bead 42 by the thinning of septum 6a etc. so that the end face of septum 6a may be contacted The contact with a bead 42 is certainly \*\*\*\*(ed) within the limits of septum 6a piece, and the stable closure nature can be held.

[0017] In addition, as for the ability also of the design change by the side of housing 6 to be coped with free as mentioned above, it is needless to say that it is what does not necessarily restrict to a bead 42 and functions similarly in the bead 41 of the outside seal section 31.

[0018]

[Effect of the Invention] As explained in full detail, as mentioned above, claim 1 and the gasket for compressors given in two Since the bead which carried out the curve protrusion covering full [ the ] is formed in the seal section fastened between a ports plate and housing, Since it is easy to be crushed conventionally, it can have the spring force of magnitude sufficient on the other hand and only the crowning of the projected bead moreover contacts both the septa by the side of housing when the seal section is fastened Even when the fluctuation on a design arises in the relative position of a bead and a septum, the closure nature which the contact with a bead was \*\*\*\*(ed) within the limits of septum width of face, and was stabilized is secured.

[0019] Moreover, like a gasket according to claim 2, on reinforcement, because a comparatively

thick substrate is required, the effectiveness is much more remarkable in that in which the retainer section of a discharge valve was installed in one from the inner seal section.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] Drawing of longitudinal section of the swash-plate-type compressor which used the gasket of this invention.

[Drawing 2] The top view showing the operation gestalt of this invention gasket.

[Drawing 3] The A-A line expanded sectional view of drawing 2 showing the wearing condition of this invention gasket.

[Drawing 4] The expanded sectional view showing the wearing condition of the seal section.

[Drawing 5] The same expanded sectional view as drawing 4 which shows the wearing condition of the conventional seal section.

[Drawing 6] The sectional view showing example of another of the conventional seal section.

[Description of Notations]

1 and 2 — a cylinder block, and 3 and 4 — a ports plate, and 5 and 6 — housing, and 14 and 15 — an inhalatorium, and 16 and 17 — a regurgitation room, and 24 and 25 — a discharge valve and 30 — a gasket and 31 — the outside seal section and 32 — the inner seal section and 33 — the retainer section, and 41 and 42 — a bead

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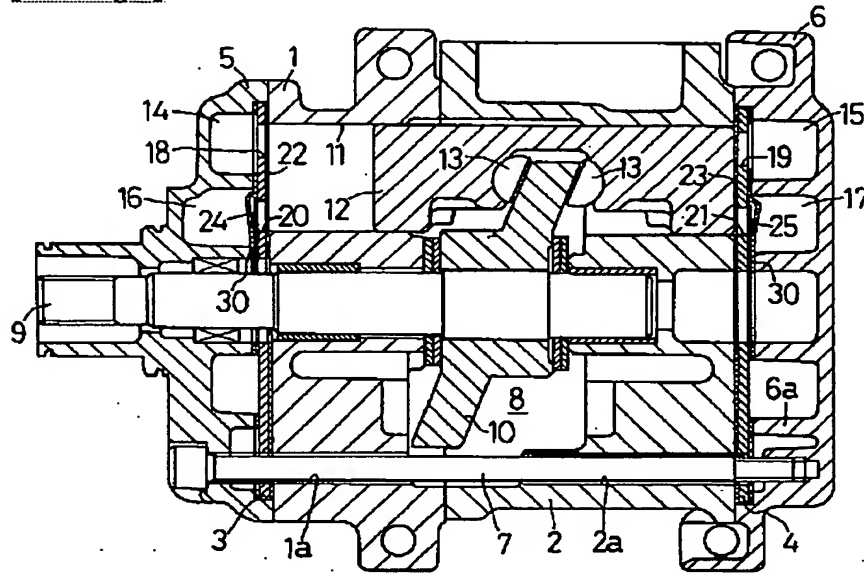
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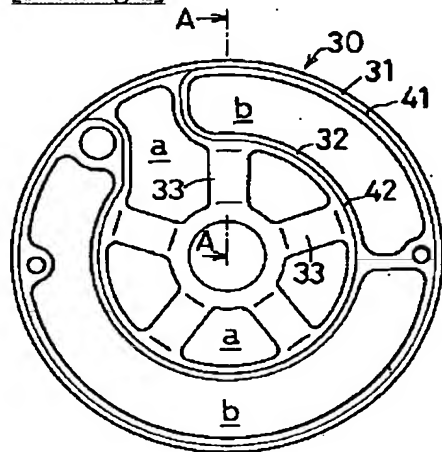
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## DRAWINGS

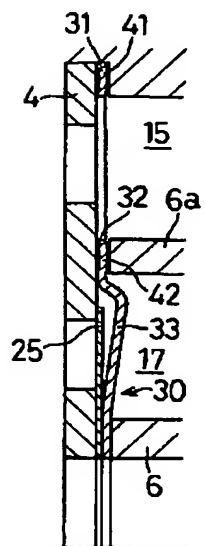
[Drawing 1]



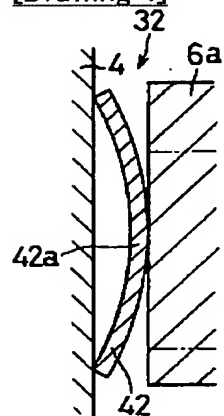
[Drawing 2]



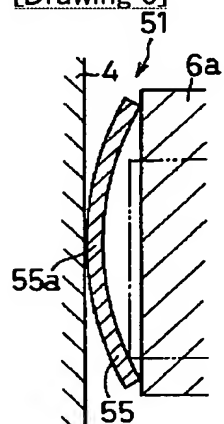
[Drawing 3]



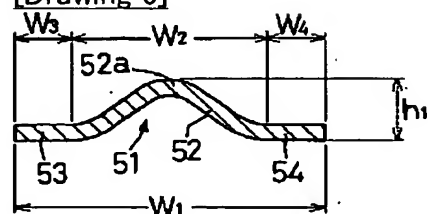
[Drawing 4]



[Drawing 5]



[Drawing 6]



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